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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/602,515	06/24/2003	Kazuo Takemasa	AK-418XX	8865

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EXAMINER	
LEUNG, RICHARD L	
ART UNIT	**PAPER NUMBER**
3744	

DATE MAILED: 07/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/602,515	TAKEMASA, KAZUO
	Examiner	Art Unit
	Richard L. Leung	3744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 June 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 June 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo et al. (US-4824454) in view of Klee (US-3433028). Kondo et al. disclose a system for cooling an object 19, comprising a preserving vessel 17, which is filled with liquid cryogen 18 such as liquid nitrogen (column 1, line 12). Referring particularly to FIG. 2 and column 2, said system further comprises a Stirling refrigerator 10 and a condensing chamber 13 outside said preserving vessel 17 wherein vaporized cryogen is re-liquefied. The gas phase part of the condensing chamber 13 is made to communicate with that of said preserving vessel 17 via conduit 15, the liquid phase part of the condensing chamber 13 is made to communicate with that of said preserving vessel 17 via conduit 16, and the cooling part 21 and 22 of said refrigerator is arranged inside the condensing chamber 13. It is clear from FIG. 2 that the liquid phase part of said condensing chamber 13 is set to a position higher than that of the liquid phase part of said preserving vessel 17 since the entire condensing chamber 13 appears to be positioned higher than said preserving vessel 17. Kondo et al. fail to disclose that liquid nitrogen in the preserving vessel is supplied from a liquid nitrogen cylinder. Klee teaches a cryogenic fluid conveying system for use with liquid nitrogen (column 1, line

26-28) comprising of a cylinder 10 and a conduit 18 through which the liquid nitrogen may be delivered from said cylinder 10 to some use. It would have been obvious to one of ordinary skill in the art to include in the system disclosed by Kondo et al. the liquid nitrogen cylinder taught by Klee in order to initially fill the preserving vessel with cryogen and to maintain the amount of cryogen in the system during use, for example, if too much liquid cryogen has been vaporized in the preserving vessel and the liquid level is subsequently too low to provide proper cooling.

3. Claims 2 and 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo et al. (US-4824454) in view of Klee (US-3433028) as applied to claim 1 above, and further in view of Yanai et al. (US-5327729). The combination of Kondo et al. and Klee, as already discussed above, demonstrates a system for cooling an object comprising a preserving vessel, a condensing chamber containing the cold parts of a Stirling refrigerator for re-liquefying vaporized cryogen, and a liquid nitrogen cylinder for supplying liquid cryogen to said preserving vessel. It is further shown that said condensing chamber is positioned above said preserving vessel. The combination fails to demonstrate an additional discharge path and safety valve in communication with the condensing chamber that operates to relieve dangerous pressure buildup, as required by claims 4 and 6. Yannai et al. teaches such a discharge path 18 and safety valve 19 in communication with a condensing chamber 1, and it would have been obvious to include this safety valve arrangement in the combination of Kondo et al. and Klee in order to prevent possible rupturing of the condensing chamber if the pressure within the chamber exceeds safe operating levels. The combination of Kondo et al. and Keel also

fails to demonstrate a pressure sensor arranged in said condensing chamber, and that the Stirling refrigerator is driven when a detection value of said pressure sensor is a predetermined value or higher, as required by claim 2. Yanai et al. teach a condensing chamber 1 for liquefying and storing nitrogen, and located within said condensing chamber 1 is the cold part 2 and 6 of a low-temperature refrigerator 3 for use in condensing nitrogen vapor. With particular reference now to column 3, lines 22-31, said chamber 1 is provided with a pressure sensor 16 that senses the pressure within said chamber 1. If the pressure drops below a predetermined pressure, than the operation of the cold part 2 of the refrigerator 3 is stopped. In other words, the refrigerator 3 is driven when a detection value of the pressure sensor is a predetermined value or higher. It would have been obvious to one of ordinary skill in the art to regulate the Stirling refrigerator demonstrated in the combination of Kondo et al. and Klee using the pressure-sensor arrangement taught by Yanai et al. in order to prevent unnecessary operation of the refrigerator, particularly when there is little vapor in the chamber, and therefore reduce the energy consumption of the system. Claim 5 requires an additional discharge path and safety valve in communication with the condensing chamber that operates to relieve dangerous pressure buildup, which is not demonstrated by the combination of Kondo et al. and Klee. Yannai et al. teaches such a discharge path 18 and safety valve 19, and it would have been further obvious to include this in the combination of Kondo et al. and Klee as already discussed above with regards to claims 4 and 6.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

> US-5195577 Kameda et al. 03-23-1993: discloses a cooling system comprising a vessel containing a cooling medium and a condensing chamber for condensing vaporized cooling medium wherein the lowest portion of the condenser is at a level higher than the top surface of the cooling medium in the vessel.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard L. Leung whose telephone number is 703-306-4154. The examiner can normally be reached on Mon-Fri.

6. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Denise L. Esquivel can be reached on 703-308-2597. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Richard L. Leung

Examiner
Art Unit 3744

rll

DENISE L. ESQUIVEL
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700